Instructions – Parts List

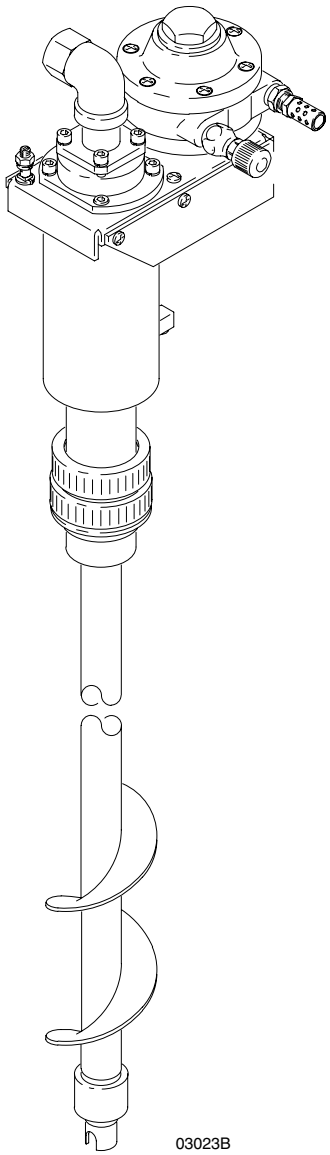
BELT-DRIVEN, STAINLESS STEEL, PNEUMATIC

Twistork™ Helix Mixer with Suction Feature

308345P
EN

For use in closed-head, bung-type, 55-gallon drums.

100 psi (0.7 MPa, 7 bar) Maximum Working Pressure



Model 236629, Series C
Standard Mixer, 0.75 HP (0.55 kW)

Model 236760, Series C
Oil-less Reversible Mixer, 0.75 HP (0.55 kW)

Important Safety Instructions
Read all warnings and instructions in this manual.
Save these instructions.

Table of Contents

Warnings 2
Application 4
Installation 5
Operation 8
Maintenance 10
Service 13
Parts Drawing 16
Parts List 17
Technical Data 18
Dimensions 19
Graco Standard Warranty 20
Graco Information 20

CE 0359

II 1/2 G c T3
ITS03ATEX11226

PROVEN QUALITY. LEADING TECHNOLOGY.

Symbols

Warning Symbol

⚠ WARNING

This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

Caution Symbol

⚠ CAUTION

This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the instructions.

⚠ WARNING

EQUIPMENT MISUSE HAZARD

Equipment misuse can cause the equipment to rupture or malfunction and result in serious injury.

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose. If you are not sure, call your Graco distributor.
- Do not alter or modify this equipment.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated component in your system. This equipment has a **100 psi (7 bar) maximum working pressure.**
- Use fluids and solvents that are compatible with the equipment wetted parts. Refer to the **Technical Data** section of all equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Always wear protective eyewear, gloves, clothing, and respirator as recommended by the fluid and solvent manufacturer.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.

⚠ WARNING

FIRE AND EXPLOSION HAZARD

Improper grounding, poor ventilation, open flames, or sparks can cause a hazardous condition and result in a fire or explosion and serious injury.

- Ground all equipment. Refer to **Grounding** on page 5.
- If there is any static sparking or you feel an electric shock while using this equipment, **shut off the agitator immediately.** Do not use the equipment until you identify and correct the problem.
- Do not use 1,1,1–trichloroethane, methylene chloride, other halogenated hydrocarbon solvents, or fluids containing such solvents in aluminum pumps. Such use could result in a serious chemical reaction, with the possibility of explosion.
- Do not use kerosene or other flammable solvents or combustible gases to flush the unit.
- Provide fresh air ventilation to avoid the buildup of flammable fumes from solvents or the fluid being dispensed.
- Keep the dispensing area free of debris, including solvent, rags, and gasoline.
- Do not smoke in the dispensing area.
- Keep a fire extinguisher in the work area.

MOVING PARTS HAZARD

Moving parts, such as the rotating blades of the agitator, can pinch or amputate your fingers or other body parts and can cause splashing in the eyes or on the skin.

- Keep clear of all moving parts when starting or operating the agitator.
- Always shut off the agitator and disconnect the air line before you remove the agitator from the drum or check or repair any part of the agitator.

HAZARDOUS VAPORS

Hazardous fluids or toxic fumes can cause serious injury or death if splashed in the eyes or on the skin, swallowed, or inhaled. When flushing the air motor, keep your face away from the exhaust port.

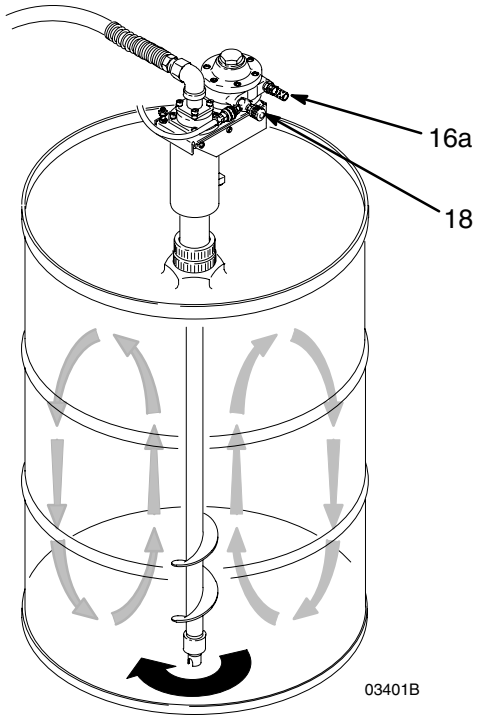
Application

The Twistork Helix Mixer is intended to mix and maintain paints and similar fluids in closed-head, 55-gallon (200-liter) drums with 2-in. npt bung connections. The Twistork Helix Mixer provides suction porting through its siphon tube, which allows you to siphon fluid to a pump while mixing it.

Standard Mixer, Model 236629

The standard mixer operates in a *center-lift* fluid rotation mode, which is preferred in most applications because it minimizes fluid aeration. The helix rotates counterclockwise and mixes fluid by lifting it up from the bottom of the drum. See Fig. 1.

Standard mixer Model 236629 **cannot** reverse its helix rotation.



Model 236629
Standard (counterclockwise) Rotation 03401B

Fig. 1

Oil-less Reversible Mixer, Model 236760

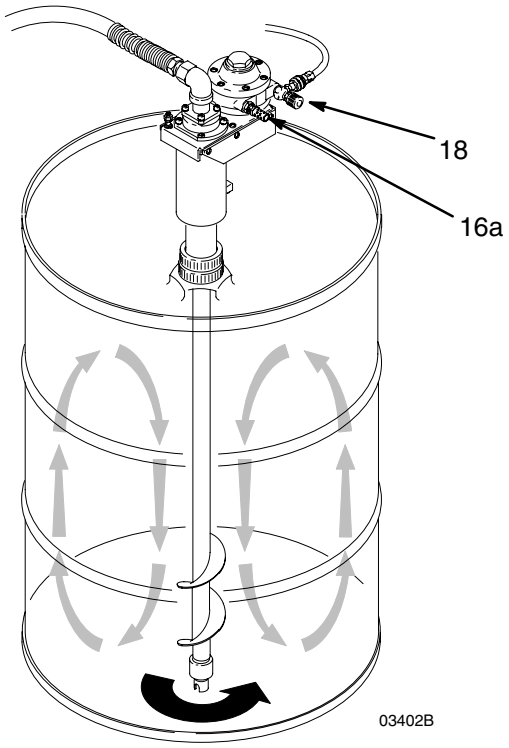
The oil-less reversible mixer operates the same as the standard mixer, but it uses a non-lubricated air supply, and the helix rotation can be reversed.

NOTE: Although the air motor can operate without oil, motor life is increased when lubrication is provided.

To reverse the helix rotation on reversible mixer Model 236760, remove the air motor muffler (16a) and needle valve (18), and switch the ports they are installed into. See Fig. 2.

When the helix rotation is reversed, the mixer operates in a *pull-down* fluid rotation mode, which can be better for agitating fluids that are difficult to put into suspension. The helix rotates clockwise and mixes fluid by pulling it down from the surface. See Fig. 2.

With clockwise (pull-down fluid rotation), care must be used at high speeds to prevent cavitation, which could be caused by air being drawn down to the siphon inlet.



Model 236760
Reversed (clockwise) Rotation

03402B

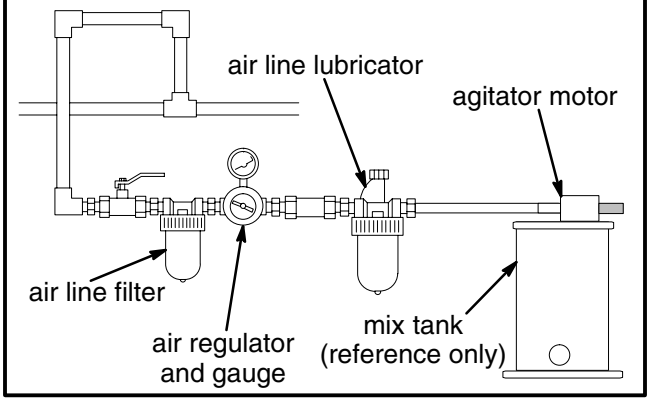
Fig. 2

Installation

⚠ WARNING

FIRE AND EXPLOSION HAZARD
Always maintain a minimum of 1 in. clearance between rotating agitator parts and container to prevent sparks from contact.

Typical Installation



Grounding Instructions

Proper grounding is an essential part of maintaining a safe system.

To reduce the risk of static sparking, all electrically conductive objects or devices in the spray area **must** be properly grounded. Check your local electrical code for detailed grounding instructions for your area and type of equipment.

To ground the helix mixer, connect the ground wire (H) to the grounding lug (J) on the collar. Connect the grounding wire clamp to a true earth ground. See Fig. 3.

To order a ground wire and clamp, order Part No. 222011.

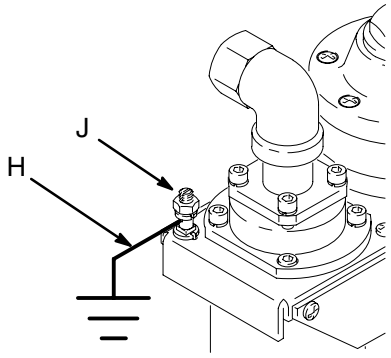


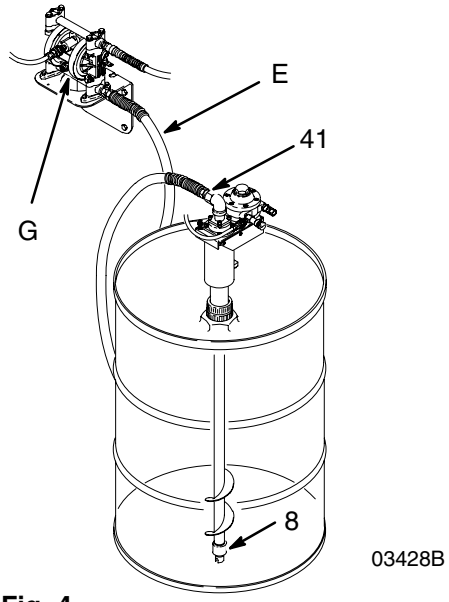
Fig. 3 03024

⚠ CAUTION

The bearing nut (8) is made of acetal, which is **not** compatible with some of the solvents used in paints or coatings and is **not** compatible with acidic fluids. Optional Rulon® bearing nut Part No. 189660 is available. Check your material data sheet and/or supplier for compatibility.

⚠ CAUTION

To avoid damaging the mixer, do not mount the pump (G) directly to the mixer outlet fitting (41). Make sure the pump is properly supported, and install a flexible suction hose (E) between the mixer outlet fitting and the pump, as shown in Fig. 4.



. Fig. 4

Installation

Air Line Accessories

The following air line accessories help to increase motor life and ease of operation.

Air Line Filter

Air line filters remove harmful dirt and moisture from the air supply. Order one of the following:

Part No. 106148: 3/8 npt(f) air line filter
Part No. 106149: 1/2 npt(f) air line filter

Air Line Lubricator (for Model 236629 only)

⚠ CAUTION

Not lubricating the air motor will cause air motor failure.

Downstream from the filter, install an air line lubricator for automatic air motor lubrication. Set the lubricator feed rate at 1 drop of oil per minute for high speed or continuous duty usage. Do not overfeed oil or exhaust air may become contaminated. To manually lubricate the air motor, see **Lubricating the Air Motor** on page 11. Order one of the following:

Part No. 214847: 3/8 npt(f) air line lubricator
Part No. 214848: 1/2 npt(f) air line lubricator

Air Line Quick-Disconnect

Install an air line quick-disconnect (F) or ball valve at the air inlet (D). See Fig. 5. Order one of the following:

Part No. 169969: 1/8 npt(m) air line quick-disconnect
Part No. 208536: 1/4 npt(f) air line quick-disconnect

Flush the Mixer Before Using It

To prevent fluid contamination, flush the mixer with solvent that is compatible with the fluid to be mixed. See **Flushing Instructions** on page 13.

Installation

Installing the Mixer

The mixer weighs 24 lb (11 kg). To manually lift it in and out of the drum, grasp the housing (3), and guide the helix tube (7) through the drum bung. See Fig. 5. Accessory handle Part No. 189658 is available so you can connect a lift hook to raise and lower the mixer or hang the mixer to store it.

⚠ CAUTION

To avoid damaging the siphon tube, lower the mixer to the drum bottom; do not drop it.

Do not install the mixer without the bearing nut (8) in place. See Fig. 6 on page 9. If the bearing nut is not installed, the siphon tube (4) and helix tube (7) will rub against each other during operation and cause damage. Replace the bearing nut if damaged or worn.

1. Hold the mixer by the housing (3) or by the accessory handle, and lower the helix tube (7) through the bung until the siphon tube rests on the bottom of the drum.

   NOTE: The tube must rest on the bottom to evacuate the maximum amount of material from the drum and to stabilize the mixer.

2. Make sure the gasket (46) is in place, screw the bung adapter (44) into the bung, and tighten the bung adapter. See Fig. 5.

3. Make sure the o-ring (20) in in place inside the lock-ring (45), then tighten the lock-ring (45).

⚠ CAUTION

To keep the helix tube pointed straight down, make sure the bung adapter (44) and lock ring (45) are tight.

4. Position the air motor so the air line (C) can be attached to the inlet (D) on the needle valve without obstructing any other system components.

5. **When using the mixer suction feature,** connect a suction hose (E) between the mixer fluid outlet fitting (41) and the pump. See Fig. 5. The hose connector must have a 30° bevel to match the fluid outlet fitting with an airtight seal. See **Maximum Siphon Flow Rate** on page 8.

   When not using the siphon feature, plug the fluid outlet fitting (41) to prevent excess fluid evaporation.

The air motor exhaust can be piped out as follows: Remove the air motor muffler (16a), and connect an exhaust line to the exhaust port.

NOTE: Model 236629 has a1/4 npt(f) exhaust port. Model 236760 has a 3/8 npt(f) exhaust port.

Model 236629 shown

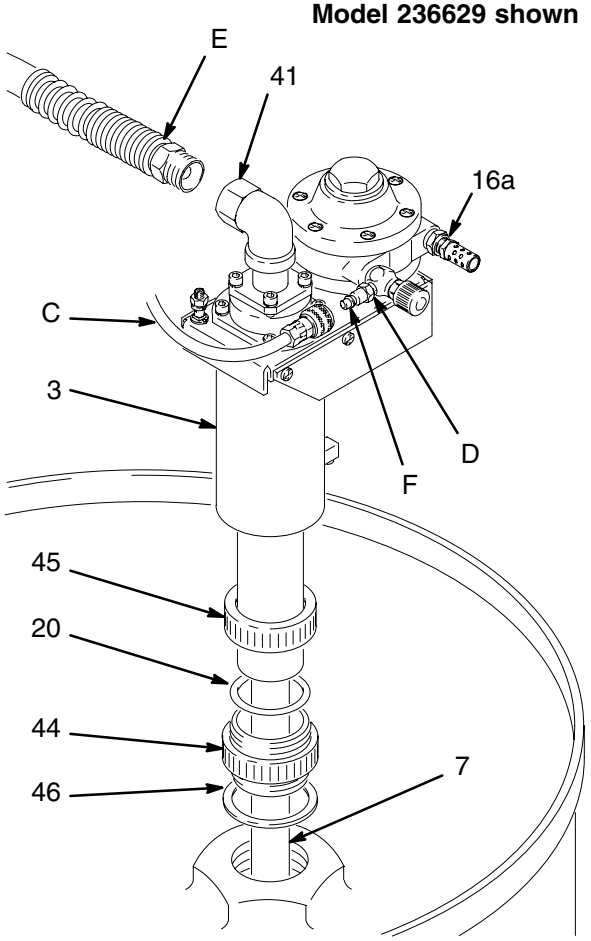


Fig. 5

Operation

⚠ WARNING

MOVING PARTS HAZARD
To reduce the risk of serious injury, including cuts, amputation of fingers, and splashing in the eyes or on the skin:

Always shut off the mixer and disconnect the air line before you check or repair the mixer.

Maximum Siphon Flow Rate

The volume of fluid that can be siphoned through the mixer inlet is determined by the viscosity of the fluid.

- The maximum flow rate is approximately 12 gpm (45 lpm) with 100-centipoise fluid.
- The maximum flow rate is approximately 1.2 gpm (4.5 lpm) with much heavier 1000-centipoise fluid.

To prevent pump cavitation, avoid flow rates higher than these. Check the fluid periodically for signs of cavitation.

Air Requirements

For continuous use, the 0.75 HP air motor typically requires 2.5 scfm (0.071 m^3/min.) of air at 400 rpm or 5.7 scfm (0.162 m^3/min.) of air at 800 rpm.

Nitrogen Charging the Drum

⚠ CAUTION

If you are using nitrogen to charge the drum, use a maximum of 0.25 psi (1.7 kPa, 0.02 bar). Such low pressure requires special regulation equipment. Use a passive, non-pressurized system when possible. Higher pressure could push fluid through the shaft seal (21) and into the top bearings (11), damaging them. See the **Parts Drawing** on page 16.

Operating the Mixer

See Fig. 6

⚠ CAUTION

The bearing nut (8) helps prevent excessive fluid flow between the siphon tube (4) and helix tube (7), but it is not intended to be a complete seal. Fluids can pass through the bearing nut into the gap between the two tubes. Before you change colors or coatings or store the mixer, clean the tubes as instructed on page 10.

NOTE: Thoroughly agitate the fluid before you use the suction feature. Agitating maximizes fluid quality and helps avoid solids getting drawn into the siphon tube and clogging it. A **Strainer Inlet Kit 236984** is available to help prevent thick sediment from being forced into the siphon inlet.

⚠ CAUTION

Do not operate the mixer at a high speed for a long period of time. Excessive mixer speed can cause the fluid to foam and can cause vibration and increased wear on parts and damage to the drum bung. Only agitate the fluid fast enough to maintain even mixing. You can view fluid movement through the 0.75-in. port on the drum cover.

NOTE: If you install an air shut-off valve, the same mixer speed is set each time it is turned on without requiring repeated needle valve adjustments. Order one of the following air shut-off valves:

Part No. 208390: 1/4 npt(m) x 1/4 npt(m)
Part No. 208391: 3/8 npt(m) x 3/8 npt(f)
Part No. 208392: 3/8 npt(f) x 1/4 npt(m)
Part No. 208393: 3/8 npt(m) x 3/8 npt(m)

You can also use an air line quick-disconnect (F) as a shut-off. See Fig. 5. See **Air Line Quick-Disconnect** on page 6.

Operation

1. Turn on the air supply to start the mixer. Regulate the helix speed with the needle valve (18).
2. Operate the mixer continuously when supplying paints or other fluids to the system.

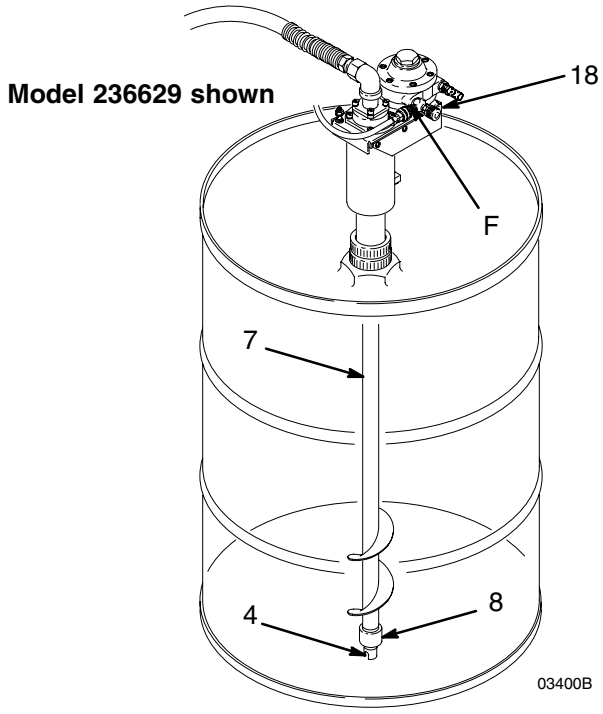


Fig. 6

Shutting Down

1. To stop the mixer, close the needle valve (18), or disconnect the quick-disconnect (F), or close the air valve in the air supply line.
2. If you remove the mixer from the drum, remove the bearing nut (8), and hang or tilt the mixer upright over a container to allow it to drain. Accessory handle Part No. 189658 is available so you can connect a lift hook to raise and lower the mixer or hang the mixer to store it.

⚠ CAUTION

Keep the mixer upright. Do not lay it on its side or upside down, because fluid might flow into the belt-drive area.

If you use the accessory mixer handle, make sure the mixer is loosened from the drum before you raise it with a lift. The handle will not support the weight of the drum.

Do not let fluid from dry in the fluid tubes. See **Cleaning the Fluid Tubes** on page 10.

Maintenance

Prolonging the Life of the Bearing Nut

⚠ CAUTION

Use a compatible solvent to clean parts. The bearing nut (8) is made of acetal, which is **not** compatible with acidic fluids. Check your material data sheet and/or supplier for compatibility. Avoid getting any solvent on the air motor belt.

- Replace the bearing nut (8) if it is damaged or worn.
- Do not allow fluids to dry out in the fluid section. Dry fluid will adhere to the bearing nut (8) and could destroy it the next time you start the mixer. Flush the fluid section before you change colors or coatings or store the mixer.
- Do not operate the mixer without fluid in the drum as this can cause excessive bearing nut (8) wear.

Cleaning the Fluid Tubes

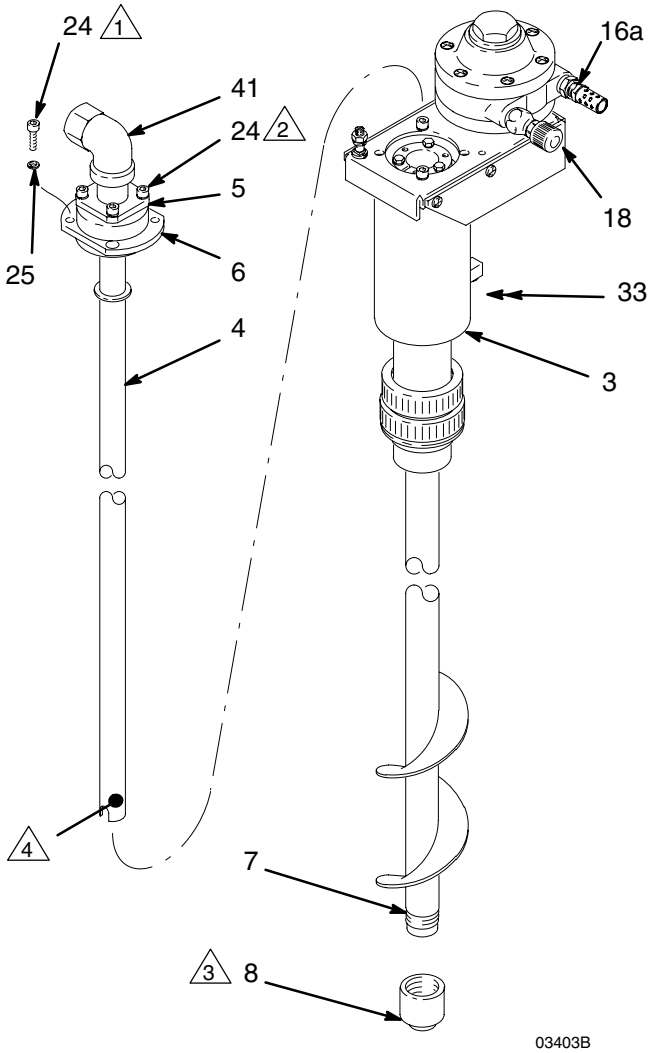
To prevent fluid from drying on the tubes and interfering with helix rotation, clean the siphon tube (4) and helix tube (7) when you change colors or coatings and when the mixer is removed from the drum long enough for the fluid to dry. Also, clean the fluid tubes for periodic maintenance as follows:

1. Remove the bearing nut (8). See Fig. 7.
2. Remove the two diagonal socket-head screws (24) and lockwashers (25) protruding from the top of the siphon cover (6).
3. Remove the siphon tube (4) as follows:
   a. Rest the mixer on its side on the drive belt housing so the inlet is lower than the outlet. This orientation prevents fluid from running into the bearing and drive belt area.
   b. Pull up on the fluid outlet fitting (41) to remove the siphon tube (4).
4. Clean the siphon tube (4), helix tube (7), and bearing nut (8). The inside diameter of the tubes can be cleaned by pulling a solvent-soaked rag through them.

NOTE: *Always* after you mix or pump catalyzed materials that could set up between the tubes without air, remove the siphon tube, and clean both tubes.

5. Apply PTFE spray lubricant to the siphon tube (4) inlet end only. Install the siphon tube through the top of the mixer housing (3).
6. Install the two socket-head screws (24) and lockwashers (25) into the top of the siphon cover (6). Torque the screws oppositely and evenly to 60 to 70 in-lbs (6.8 to 7.9 N•m).
7. Apply PTFE spray lubricant to the inside lip of the bearing nut (8), and tighten it onto the helix tube (7).

Model 236629 shown



1 Torque oppositely and evenly to 60 to 70 in-lbs (6.8 to 7.9 N•m).

2 Torque oppositely and evenly to 80 to 100 in-lbs (9 to 11.3 N•m).

3 Apply PTFE spray lubricant to inside lip of bearing nut before you install it.

4 Apply PTFE spray lubricant to the siphon tube (4) inlet end before you install it.

03403B

Fig. 7

Maintenance

Lubricating the Air Motor (Model 236629 Only)

⚠ CAUTION

Not lubricating the air motor will cause air motor failure.

If an air line lubricator is not installed, the air motor must be manually lubricated every 8 hours. Lubricate the agitator air motor by placing 10–20 drops of SAE #10 light oil in the motor's air inlet. Run the agitator for about 30 seconds.

Cleaning the Air Intake Check Valve

The air intake check valve (33) allows make-up air to enter the closed drum as fluid is drawn out through the mixer outlet port. See Fig. 7. The air intake check valve should be inspected and cleaned every 2000 operating hours or when there are any signs of the drum beginning to collapse as fluid is drawn out.

Pump priming problems can indicate a plugged air intake check valve. Paint overspray in the air can be drawn into the valve and cause the ball to stick in the closed position.

To clean the air intake check valve

1. Remove the seat (33) and ball (34). See the **Parts Drawing** on page 16.
2. Clean the parts with compatible solvent, and reassemble the valve.
3. Insert the ball (34), and tighten seat (33) until just snug.

   NOTE: The seat should not be flush with the elbow (32). Installing the seat too tightly could jam the ball against the seat.

Correcting a Bad Suction Line Seal

Air getting pulled into the suction line makes the pump inefficient. This can happen for the following reasons:

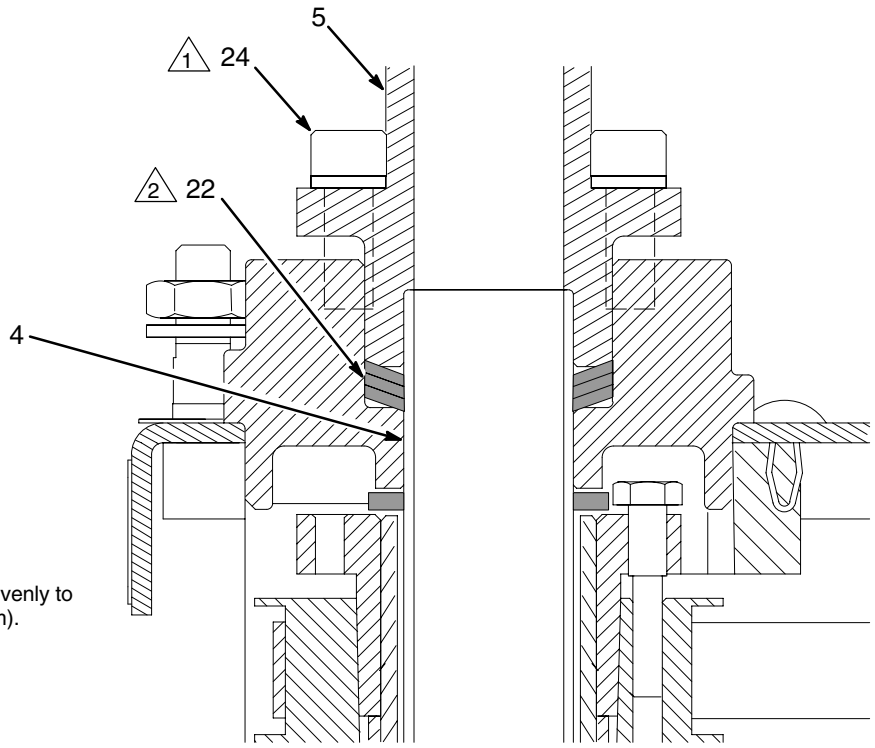
- Cavitation is occurring, because the pump or helix is going too fast.
- Siphon hose connection is leaking.
- Nylon rings (22) are not sealing. See Fig. 8.

To correct the problem (see Fig. 8)

1. Torque the four socket-head screws (24) in the siphon fitting (5) oppositely and evenly to 80 to 100 in-lbs (9.0 to 11.3 N•m).

   NOTE: If Step 1 does not correct the problem, do Steps 2 through 5.

2. Replace the rings (22). Make sure the outer lips face up, as shown in Fig. 8.
3. Insert the inlet tube (4) into the bottom of the siphon fitting (5).
4. Tap the bottom of the inlet tube (4) to make sure the tube passes through the rings (22) and seats on the siphon fitting (5).
5. Torque the four socket-head screws (24) in the siphon fitting (5) oppositely and evenly to 80 to 100 in-lbs (9.0 to 11.3 N•m).



1 Torque screws oppositely and evenly to 80 to 100 in-lbs (9.0 to 11.3 N•m).

2 Install with outer lips facing up.

TI0302

Fig. 8

Service

⚠ WARNING

MOVING PARTS HAZARD

To reduce the risk of serious injury, including cuts, amputation of fingers, and splashing in the eyes or on the skin

- Always shut off the mixer and disconnect the air line before you check or repair the mixer.
- Wear eye protection.

⚠ WARNING

FIRE AND EXPLOSION HAZARD

To prevent an explosive hazard, in which injury and/or property damage can result

- Do not operate the air motor with combustible gases.
- Do not use kerosene or other flammable solvents for flushing.

⚠ WARNING

HAZARDOUS FLUIDS

Keep your face away from the exhaust port. Foreign material exiting the air motor can be hazardous.

Flushing Instructions

If the motor is sluggish or inefficient, flush it with non-flammable solvent in a well-ventilated area.

The recommended solvent for air motors and lubricated pumps is Gast® flushing solvent (Part No. AH255 or AH255A) or Inhibisol® Safety Solvent.

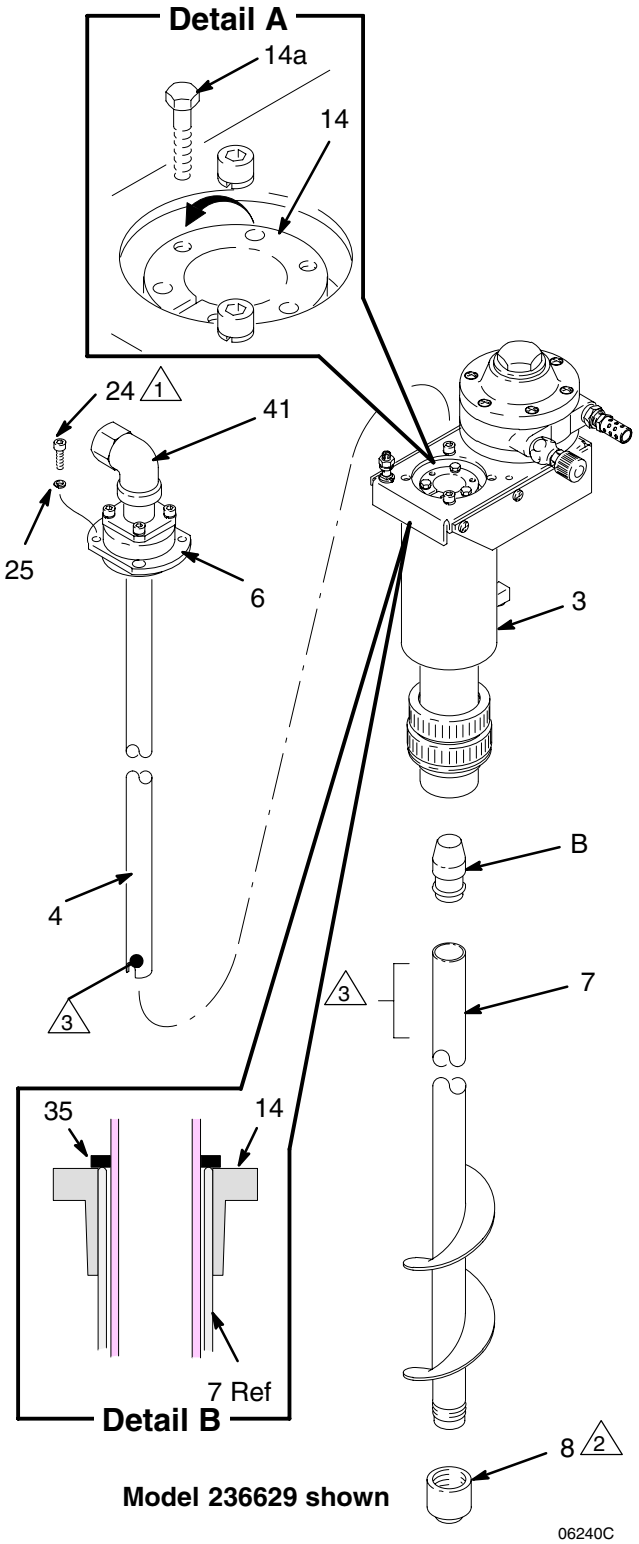
1. Disconnect the air line and muffler.
2. Dump or spray several teaspoons of solvent directly into the motor.
3. Rotate the shaft by hand in both directions for a few minutes.
4. Reconnect the air line, and slowly increase air pressure until there is no trace of solvent in the exhaust air.
5. Re-lubricate the motor with a squirt of light-weight oil in the chamber.

Servicing Guidelines

NOTE: If the motor does not operate properly after flushing, order and install the repair kit for your air motor. The instructions for servicing the air motor are included with the kit. See page 17 to order the kit.

- If the mixer requires more than installation of a service kit, it is usually quickest and easiest to send it to the Graco distributor for repair or replacement.
- If the vanes need replacing or foreign material is present in the motor chamber, an experienced mechanic may remove the end plate opposite the drive shaft end. *Do not pry with a screwdriver.* It will dent the surface of the plate and body and cause leaks. Use a puller tool, which will remove the end plate while maintaining the position of the shaft.
- New vanes should have the edges with cut corners (or the notched edges, if the vanes are reversible) pointing toward the bottom of the vane slot.

Service



Model 236629 shown

1 Torque oppositely and evenly to 60 to 70 in-lb (6.8 to 7.9 N•m).

2 Apply PTFE spray lubricant to inside lip of bearing nut before you install it.

3 Apply PTFE spray lubricant to siphon tube (4) inlet end and to top 6 in. (150 mm) of helix tube before you install them.

Fig. 9

Removing the Siphon and Helix Tubes

1. Remove the bearing nut (8). See Fig. 9.
2. Remove the two diagonal socket-head screws (24) and lockwashers (25) protruding from the top of the siphon cover (6).
3. Remove the siphon tube (4) as follows:
   a. Rest the mixer on its side on the drive belt housing so the inlet is lower than the outlet. This orientation prevents fluid from running into the bearing and drive belt area.
   b. Pull up on the fluid outlet fitting (41) to remove the siphon tube (4).
4. Remove the three hex-head screws (14a) from the bushing (14), and install the screws into the bushing's threaded holes as shown in **Detail A** of Fig. 9. Tighten the screws evenly to loosen the bushing from the helix tube (7).
5. Pull the helix tube (7) through the bottom of the mixer housing (3).

Removing the Drive Belt

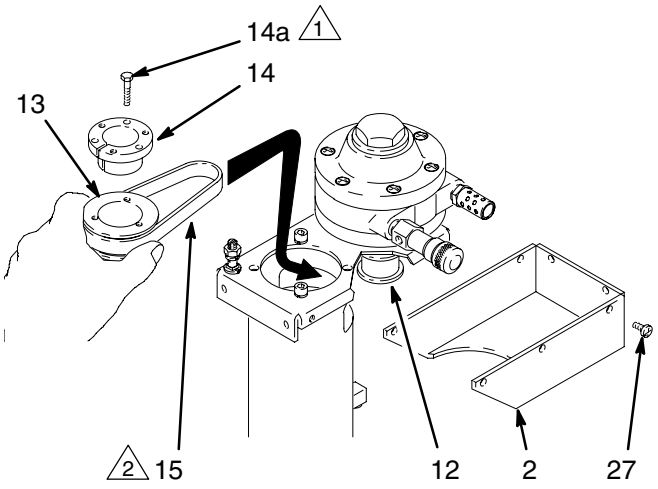
NOTE: Replace the drive belt (15) if it is cracked or worn.

⚠ WARNING

To avoid static electricity buildup and possible sparking, which could cause fire and explosion, replace the drive belt with a genuine ESD rated and marked belt only (Graco Part No. 112552).

1. Remove the siphon tube (4) and helix tube (7) as instructed above.
2. Remove the eight screws (27) and the drive belt cover (2). See Fig. 10.
3. Remove the three hex-head screws (14a) and the bushing (14).
4. Slide the drive belt (15) over the smaller pulley (12). Then remove the larger pulley (13) and the drive belt (15) as shown in Fig. 10.

Model 236629 shown



1 With helix tube (7) flush with top of bushing (14), torque the screws oppositely and evenly to 55 to 60 in-lbs (6.2 to 6.8 N•m).

2 Replace with a genuine ESD rated and marked belt only.

03027B

Fig. 10

Assembling the Mixer

1. Make sure the spacer (10) is in place (see **Parts Drawing** on page 16). With its larger-I.D. taper facing up, install the larger pulley (13) and the drive belt (15) through the mixer housing. See Fig. 10.
2. Slide the other end of the drive belt over the smaller pulley (12). The drive belt should **not** be tight after it is installed. Make sure the pulleys are aligned, then secure the small pulley (12) by tightening its setscrew. Torque setscrew to 45 to 55 in–lbs (5.1 to 6.2 N•m).
3. Place the bushing (14) into the larger pulley (13).
4. Install the screws (14a) in the non-threaded holes in the bushing (14); do not tighten the screws yet.
5. Place the installation tool (B) on the end of the helix tube. See Fig. 9.

   NOTE: The installation tool (B) is included with Shaft Seal Kit 236762.

⚠ CAUTION

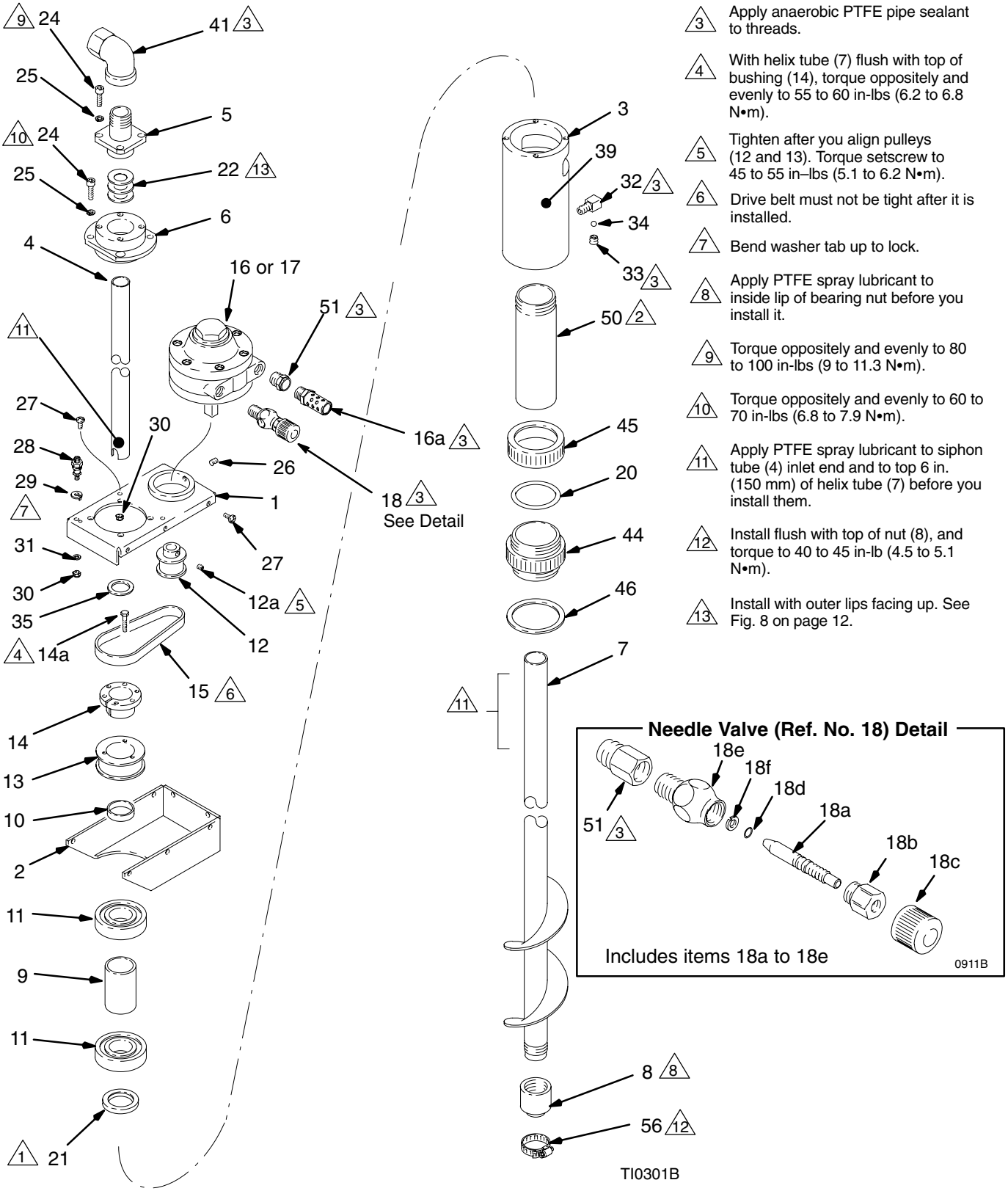
Use the installation tool (B) to insert the helix tube (7) through the shaft seal (21) without damaging the seal lip. See Fig. 9. See the **Parts Drawing** on page 16 for the location of the seal.

6. Apply PTFE spray lubricant to the top 6 in. (150 mm) of the helix tube (7). While holding the pulley (13) down, push the helix tube and tool (B) up through the bottom of the mixer housing (3) until the tube is flush with the top of the bushing (14). Then remove the installation tool.

   Wedge a screwdriver blade into the gap of the bushing (14) to spread the bushing while inserting tube (7).
7. Torque the three hex-head screws (14a) oppositely and evenly to 55 to 60 in-lbs (6.2 to 6.8 N•m). See Fig. 10.
8. Install the thrust washer (35) flush to the bushing (14) as shown in **Detail B** of Fig. 9.
9. Secure the drive belt cover (2) with the eight screws (27).
10. Apply PTFE spray lubricant to the siphon tube (4) inlet end only. Install the siphon tube through the top of the mixer housing (3). See Fig. 9.
11. Install the two socket-head screws (24) and lockwashers (25) into the top of the siphon cover (6). Torque the screws oppositely and evenly to 60 to 70 in-lbs (6.8 to 7.9 N•m).

    NOTE: The helix tube (7) should move up and down about 0.05 inch (1.3 mm). If it does not, the bearings (11) are not fully seated. Push the bearings in until they are fully seated. See the **Parts Drawing** on page 16 for the location of the bearings.
12. Apply PTFE spray lubricant to the inside lip of the bearing nut (8), and tighten it onto the helix tube (7).

Parts Drawing



1 Press into place; lips face down.

2 Apply high-strength thread sealant to threads.

3 Apply anaerobic PTFE pipe sealant to threads.

4 With helix tube (7) flush with top of bushing (14), torque oppositely and evenly to 55 to 60 in-lbs (6.2 to 6.8 N•m).

5 Tighten after you align pulleys (12 and 13). Torque setscrew to 45 to 55 in–lbs (5.1 to 6.2 N•m).

6 Drive belt must not be tight after it is installed.

7 Bend washer tab up to lock.

8 Apply PTFE spray lubricant to inside lip of bearing nut before you install it.

9 Torque oppositely and evenly to 80 to 100 in-lbs (9 to 11.3 N•m).

10 Torque oppositely and evenly to 60 to 70 in-lbs (6.8 to 7.9 N•m).

11 Apply PTFE spray lubricant to siphon tube (4) inlet end and to top 6 in. (150 mm) of helix tube (7) before you install them.

12 Install flush with top of nut (8), and torque to 40 to 45 in-lb (4.5 to 5.1 N•m).

13 Install with outer lips facing up. See Fig. 8 on page 12.

Needle Valve (Ref. No. 18) Detail

Includes items 18a to 18e

0911B

Parts List

Model 236629 Standard Mixer

Includes items 1 to 16 and 18 to 50, 57–58

Model 236760 Oil-less Reversible Mixer

Includes items 1 to 15 and 17 to 58

Ref. No.	Part No.	Description	Qty.
1	236720	BRACKET	1
2	189648	COVER, belt drive	1
3	189649	HOUSING, mixer	1
4	189651	TUBE, siphon	1
5	189653	FITTING, siphon	1
6	189654	COVER, siphon	1
7	236719	TUBE, helix	1
8✓‡	189655	NUT, bearing; acetal AF	1
9	189656	SPACER, bearing	1
10	189657	SPACER, pulley	1
11	112548	BEARING, ball	2
12	112549	PULLEY (small), drive belt Includes item 12a	1
12a	–	• SETSCREW, pulley; 1/4 x 20 x 3/16 in. *(not a replacement part)*	1
13	112550	PULLEY (large), drive belt	1
14	112551	BUSHING, QD taper lock; includes items 14a	1
14a	–	• SCREW, hex head; #10–24 x 1 in. *(not a replacement part)*	3
15✓	112552	BELT, drive; ESD rated / marked	1
16*	101140	AIR MOTOR, standard; 0.75 HP *Model 236629 only* Includes item 16a	1
16a	113779	• MUFFLER, exhaust; 1/4 npt	1
17**	112723	AIR MOTOR, reversible, oil-less; 0.75 HP *Model 236760 only*; Includes item 16a	1
18	206264	VALVE, needle *Includes items 18a to 18f*	1
18a	166529	.VALVE, needle	1
18b	166532	.NUT, packing	1
18c	164698	.KNOB, adjusting	1
18d	157628	.O–RING, packing	1
18e	165722	.BODY, valve	1
18f	166531	.WASHER	1
20✓	112553	O-RING; PTFE	1
21†✓	112555	SEAL, shaft; graphite-filled PTFE	1
22✓	195045	RING, seal, tube support; Nylon	3
24	112556	SCREW, socket-head; M6 x 16	8
25	108050	LOCKWASHER, spring; M6	8
26	112557	SCREW, set; M6	1
27	106084	SCREW, pan-head; M5 x 10	10
28	104029	LUG, grounding	1
29	104582	WASHER, tab	1
30	105332	LOCK NUT, hex	3
31	100718	LOCKWASHER; #10	1
32	100839	ELBOW, street; 1/8 npt	1
33	189659	SEAT, check valve	1
34	105691	BALL; 1/4 in. diameter; SST	1
35	189662	WASHER, thrust	1
39▲	189527	LABEL, warning	1
41	112572	UNION, swivel; 90°	1
44	178575	ADAPTER, bung	1
45	178576	RETAINER, o-ring	1
46✓	106537	GASKET; polyethylene	1
50	189650	TUBE, housing	1
51	159841	ADAPTER; 3/8 npt(m) x 1/4 npt(f); *Model 236760 only*	2
56	110980	CLAMP, hose *Model 236760 only*	1
57▲	15A722	LABEL, warning	1
58▲	16A614	LABEL, warning	1

* *A repair kit is available. Order Repair Kit 207335 for standard air motor (Part No. 101140).*

** *A repair kit is available. Order Repair Kit 236996 for reversible oil-less air motor (Part No. 112723). You must also order two adapters (Part No. 159841), to adapt the needle valve and muffler.*

† *This part is included in Repair Kit 236762, which may be purchased separately. The kit also includes an installation tool, which is needed to insert the helix tube through the shaft seal without damaging the seal lip.*

‡ *An optional Rulon bearing nut is available. Order Part No. 189660.*

✓ *Keep these spare parts on hand to reduce down time.*

▲ *Replacement Danger and Warning labels, tags, and cards are available at no cost.*

Technical Data

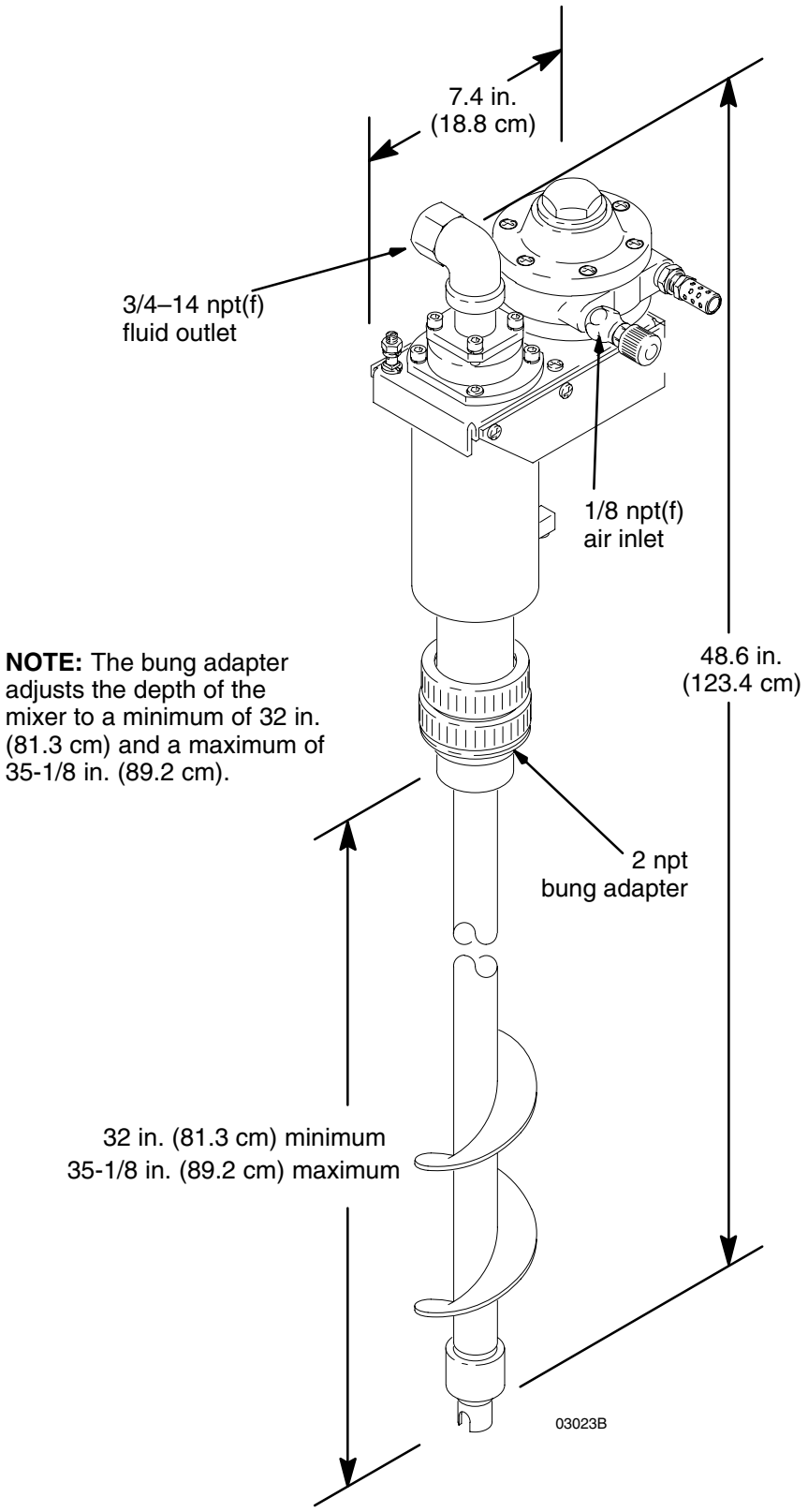
Maximum working pressure	100 psi (0.7 MPa, 7 bar)
Maximum recommended helix speed	800 rpm
Maximum siphon flow rate	
with 100 centipoise material	approximately 12 gpm (45 lpm)
with 1000 centipoise material	approximately 1.2 gpm (4.5 lpm)
Air consumption	
at 400 rpm	2.5 scfm (0.071 m^3/min)
at 800 rpm	5.7 scfm (0.162 m^3/min)
Noise level at 400 to 800 rpm (tested to CAGI-PNEUROP–1969)	< 70 dBA
Weight	24 lb (11 kg)
Wetted parts	304 and 316 stainless steel, graphite-filled PTFE, acetal AF, Rulon® LR
External parts that may come in contact with fluid	
Bung adapter (Ref. No. 44)	carbon steel
Air check valve elbow (Ref. No. 32)	carbon steel
Housing (Ref. No. 3)	aluminum

Rulon® is a registered trademark of Dixon, a division of Furon.

Gast® is a registered trademark of Gast Manufacturing.

Inhibisol® is a registered trademark of Penetone Corp.

Dimensions


7.4 in.
(18.8 cm)
3/4–14 npt(f)
fluid outlet
1/8 npt(f)
air inlet
48.6 in.
(123.4 cm)
NOTE: The bung adapter adjusts the depth of the mixer to a minimum of 32 in. (81.3 cm) and a maximum of 35-1/8 in. (89.2 cm).
2 npt
bung adapter
32 in. (81.3 cm) minimum
35-1/8 in. (89.2 cm) maximum
03023B

Graco Standard Warranty

Graco warrants all equipment manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non–Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

Graco makes no warranty, and disclaims all implied warranties of merchantability and fitness for a particular purpose in connection with accessories, equipment, materials or components sold but not manufactured by Graco. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS
The parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés à la suite de ou en rapport, directement ou indirectement, avec les procedures concernées.

Graco Information

For the latest information about Graco products, visit www.graco.com.
For patent information, see www.graco.com/patents.

TO PLACE AN ORDER, contact your Graco distributor, or call to identify the nearest distributor:
Phone: 612–623–6921 **or Toll Free:** 1–800–328–0211 **Fax:** 612–378–3505

All written and visual data contained in this document reflect the latest product information available at the time of publication.
Graco reserves the right to make changes at any time without notice.

Original instructions. This manual contains English. MM 308345

Graco Headquarters: Minneapolis
International Offices: Belgium, China, Japan, Korea

GRACO INC. AND SUBSIDIARIES • P.O. BOX 1441 • MINNEAPOLIS, MN 55440–1441 • USA
Copyright 1994, Graco Inc. All Graco manufacturing locations are registered to ISO 9001.
www.graco.com
Revision P – December 2012